Management Options of Caesarean Scar Ectopic Pregnancy: A Retrospective Cohort Study

Thesis

Submitted for Partial Fulfillment of the Master Degree in Obstetrics and Gynecology

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List of Contents

List of Tables

List of Figures

List of Figures Cont...

List of Abbreviations

Abb.	Full term
AIP	Abnormally invasive placenta
ASUH	Ain Shams University Hospital
COS	Cross-over sign
CS	Caesarean section
CSP	Cesarean section scar pregnancy
MRI	Magnetic resonance imaging
MTX	Methotrexate
RMT	Residual myometrial thickness
UAE	Uterine artery embolization
β-hCG	beta-human chorionic gonado tropin

Protocol

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Introduction

A rare but potentially catastrophic complication of a previous caesarean birth is embryo implantation in a previous cesarean scar resulting in a cesarean scar pregnancy (CSP).

it's still unclear regarding its optimal management and a variety of therapeutic strategies are used but still no management consensus at this time (***Deans R and Abbott J,2009*****)**

Several different protocols have been reported with variable success rates, although overall the resolution time for the CSP mass is long ***(Ash A and Smith A et al.,2007)***
Early interruption of the pregnancy is the current primary intervention.
Both medical and surgical approaches to the management of CSP are reported, Medical management goes around the systemic use of Methotrexate which is primarily used for early CSP or by local injection of embryo-toxic agent direct into the gestational sac.

Direct curettage of the pregnancy, Laparoscopic removal, laparotomy with open resection or hystrectomy, hystroscopical resection are the surgical interventions that are currently used for CSP ***(Ash A and Smith A et al.,2007*** and ***Deans R and Abbott J,2009*****)**

Also the huge increase in complications of placentation in subsequent pregnancies, e.g., placenta accreta and its subtypes ***(Ananth CV, Smulian JC et al.,1997)*** has been associated with the secondary rise of repeated cesarean delivery ***(Ananth CV, Smulian JC et al.,1997)***

Some rare but serious times the blastocyst implants in the

uterine scar of a previous caesarean section resulting in cesarean scar pregnancy (CSP), and it's now considered as a late complication of the increasingly common obstetric procedure.. Major maternal morbidity including life-threatening haemorrhage and uterine rupture are two of the most serious complications caused by CSP.

The expanding use of early pregnancy transvaginal ultrasound and the rising rate of cesarean deliveries[2] resulted in increasing the diagnosis of CSP, though it's still considered as a rare obstetric complication, with a reported incidence of 1:1800–1:2216 pregnancies ***(Deans R and Abbott J, 2009 Ash A*** and ***Smith A et al., 2007*****)**

Almost all CSP are terminated during the first trimester and very few of these pregnancies reported in the literature progressed beyond this period (***Marcus S, Cheng E et al., 1999*** and ***Shih JC, 2014).***
If that developing pregnancy in a caesarean section scar were to continue to the second or third trimesters, the result would be a substantial risk of uterine rupture with catastrophic haemorrhage, with a high risk of hysterectomy causing serious maternal morbidity and loss of future fertility.

If this pregnancy is viable and protruded through the scar, it can be implanted on other abdominal organs and continue to grow as a secondary abdominal pregnancy (***Marcus S, Cheng E et al., 1999)***, there is also a danger of invasion of the bladder by the growing placenta.

The risk of placenta accreta in significantly increased up to three to five folds if the pregnancy continues within the uterus

(Miller DA, Chollet JA et al., 1997)
A case of CSP has been described as progressing to 35 weeks of gestation but it was complicated by disseminated intravascular coagulopathy, massive hemorrhage and, required a life-saving hysterectomy.

A prompt and accurate diagnosis for CSP is crucial,because a delay in the diagnosis of pregnancy in the uterine scar may result in rupture of the uterus ***(Einenkel J, Stumpp P et al., 2005)***

Failure to recognize this type of ectopic pregnancy may result in subsequent uterine rupture and severe maternal morbidity, from the natural progression of this disorder, therefore awareness of the features of CSP by ultrasound practitioners is critical.

Abdominal pain and bleeding, which may range from spotting to life-threatening hemorrhage are important clinical manifestations that CSP diagnosis should rely on, as according to Seow et al ***(Seow KM, Huang LW et al., 2004)***
history may be helpful in differentiating this condition from other forms of pregnancy failure in contrast to Spontaneous or inevitable abortions which usually begin with more extensive bleeding from the detached chorionic sac. Furthermore, most aborting patients complain of cramping or lower abdominal pain and sometimes exhibit cervical motion or adnexal tenderness, pregnancies in a uterine scar, present with only mild or moderate lower abdominal pain.

Endovaginal ultrasound examination was the primary diagnostic modality in all of the published cases except for the first one reported by Larsen and Solomon
However several techniques have been used to diagnose uterine scar pregnancies.

Enhancement of the diagnostic capability of endovaginal ultrasonography can be achieved by using Color Doppler imaging and 3-dimensional power Doppler ultrasonography by evaluating the flow, resistance, and pulsatility indices in the peri-trophoblastic vasculature ***(Shih JC,2004)***

Both sagittal and transverse T1- and T2-weighted MRI sequences can clearly show the gestational sac embedded in the anterior lower uterus, also Magnetic resonance imaging (MRI) has been used as an adjunct to ultrasound scan ***(Godin P-A, Bassil S et al., 1997)***.

Termination of pregnancy (TOP) in the first trimester is strongly recommended, as there is a high risk of subsequent uterine rupture, massive bleeding and life-threatening complications.
However and because of the rarity of the condition, majority of CSPs are case reports or small case series reported in the literature, with no consensus on the preferred mode of treatment.

Risk of invasion of the bladder, vascularity of the placental bed, depth of placental implantation are all considerably less than those later in pregnancy, as at this gestation, the embryo is soft and fragile.

It’s too important to remove the gestational sac and to retain patient’s future fertility, so treatment objectives should be to perform feticide prior to rupture.

Gestational age and viability, evidence of myometrial deficiency and clinical symptoms at presentation have been

considered by various authors to determine the management ***(Ash A and Smith A et al.,2007)***

Study Objectives

At Ain Shams University Hospital (ASUH), the biggest tertiary obstetric and gynaecology hospital in Estern Cairo, Egypt,
we anecdotally have observed an increase in the occurrence of CSPs over the past decade.
The aim of this study is to identify the clinical presentations, determinants of management and management outcomes in presenting our experience with this condition over a ten-year period.

Study Duration: 10 years

Study Design

- Type of Study: Rertrospective cohort
- Study Setting: Ain Shams University Maternity Hospital
- Study Population: Patients diagnosed as CSP
- Sampling Method: Cases will be identified by interrogation of the institutional gynaecological database
- Sample Size**:** cohort series of women presenting to ASUH, Cairo, Egypt, between January 2008 and January 2018 in which a diagnosis of a caesarean scar ectopic pregnancy was made

Study Procedure:

Cases will be identified by interrogation of the institutional gynaecological database. Cases of CSPs will be identified by evaluating case notes coded as ‘ectopics-other (not tubal)’ or ‘ectopics-site unspecified’.
The sonographic criteria used for CSP diagnosis included an empty uterine cavity with endometrium clearly seen, a gestation sac sited in the anterior portion of the uterine isthmus with an empty cervical canal, and the gestational sac surrounded by myometrium and separate from the endometrial cavity with peripheral circumferential vascularity.

Statistical analysis

Protocol approval

Before the beginning of the study and in accordance to with the local regulation followed, the protocol and all the corresponding documents will be declared for ethical and research approval by the council of OB/GYN Deartment, Ain Shams University.